

Enhancing employability through railway-research informed education

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Teaching and Learning Conference 2017

Research-Intensive Teaching at the University of Birmingham

4 July 2017

Enhancing employability through railway-research informed education

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Abstract: This talk discusses how to improve students' employability through the use of railway infrastructure research to inform education and teaching for Railway Infrastructure Engineering Module (a Year 2 Engineering Subject) at the University of Birmingham, U.K. Novel research findings have been promoted in solving various challenges in railway infrastructure engineering module. In the classes, a combination of videos, case studies, industrial projects, field data and commercial software have been used to engage with students. This presentation highlights the use of case studies that help students visualise practical challenges and constraints, as part of *'experiential-based learning'*. The fundamental reasons and root causes of the problem has been introduced in classes to interact and to draw enquiries from students. Then, the applications of novel research findings to resolve the challenges have been discussed through the series of discussions on complexities of real-world projects, practicalities and constructability of the research-based solutions. The classes embrace the *'inquiry-based learning'* through teaching and learning guidance through knowledge application associated with novel research findings to help solving the practical problems. Based on the learning feedbacks, students learnt and developed problem solving skill, teamwork and computer literacy which are the key ingredients for graduate employability. In contrast, the feedbacks helped to improve adaptive teaching style where the lecturer must be prepared to tailor the pace of teaching to suit particular cohort of students. The teaching experience will also lead to the development of digital-based technology to enhance learning of theoretical concepts prior to class, using *'flipped class'* teaching style.

Keywords: experiential based learning, inquiry-based learning, flipped class, employability, research-led teaching, railway infrastructure engineering, teaching pedagogies

Location: Haworth Building - Lecture Theatre 101, Murray Learning Centre

<http://www.birmingham.ac.uk/events/events/teaching-and-learning-conference-2017.aspx>